Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A ~~portable system~~ device for detecting a selected analyte using bioluminescence, comprising:

a stably transformed bacterium containing a construct integrated into the bacterial cell genome, said construct comprising a promoterless *lux* gene cassette ~~having a regulatory element for a selected analyte~~ and a *mer* regulatory element ~~inserted in front of the *lux* gene cassette~~ responsive to an analyte comprising mercury;

a support matrix comprising a filter strip onto which the bacterium is attached; and

an encapsulating material to contain said bacterium attached to ~~the support matrix~~ said filter strip, wherein the encapsulated bacterium emits visibly detectable light in the presence of said analyte comprising mercury ~~, and a portable detection device~~.

2. (Currently amended) The device of claim 1, wherein the ~~*lux* gene cassette~~ construct comprises ~~*merRo/pA-lux*~~ *mer Ro/p-lux*.

3. (Currently amended) The device of claim ~~2 further comprising~~ 1, wherein the construct comprises *merRo/pA-lux* ~~gene cassette incorporated into the transformed bacterium~~.

4. (Withdrawn) The device of claim 1 wherein the analyte is naphthalene, toluene, ethylbenzene, 2, 4-dichlorophenoxyacetic acid, ß-phenyl ethylamine, phenols or biphenyls.

5. (Currently amended) The device of claim 1, wherein the analyte ~~is~~ comprises mercury II ion.

6. (Canceled)

7. (Canceled)

8. (Currently amended) The device of claim 1, wherein the bacterium is selected from the group consisting of *P. Pseudomonas fluorescens* ~~5R~~, *P. putida* 2440, *P. putida* F1, *Escherichia coli*, *Vibrio fischerii*, *Vibrio harveyi*, and *Bacillus subtilis*.

9. (Previously presented) The device of claim 8, wherein the *P. fluorescens* is *P. fluorescens* 5R.

10. (Original) An apparatus comprising the device of claim 1.

11. (Currently amended) The apparatus of claim 10, further comprising a holder for the support matrix onto which the bacterium is immobilized.

12. (Original) The apparatus of claim 11 adapted to hand-carrying.

13. (Currently amended) A genetically modified bacterium responsive to ~~divalent~~ mercury, said bacterium ~~being~~ encapsulated in an encapsulating material and containing a construct integrated into the bacterial cell genome, said construct comprising a promoterless *lux*

gene cassette and a *mer* regulatory element ~~a *merRo/p-lux* gene stably integrated into the bacterial chromosome~~, wherein said bacterium produces a bioluminescent protein in the presence of ~~divalent~~ mercury.

14. (Canceled)

15. (Currently amended) The genetically modified bacterium of claim 13 ~~that is encapsulated in a matrix~~, wherein said encapsulating material is at least one selected from the group consisting of alginate, carrageenan, acrylic vinyl acetate copolymer, latex, polyvinyl chloride polymer, sol-gels, agar, agarose, micromachined nanoporous membranes, polydimethylsiloxane (PDMS), polyacrylamide, polyurethane/polycarbamyl sulfonate and polyvinyl alcohol.

16. (Currently amended) The encapsulated genetically modified bacterium of claim 13 ~~that is attached to~~, further comprising a support matrix comprising a filter strip onto which said bacterium is attached.

17. (Canceled)

18. (Currently amended) The bacterium of claim 16, wherein the filter strip comprises cellulose ~~support comprising the genetically modified bacterium of claim 13~~.

19. (Currently amended) A portable kit for detecting mercury ~~II ion~~ comprising the ~~system~~ device of claim 2 or 3 and instructions for use in detecting mercury ~~ion~~.

20. (Canceled)

21. (Canceled)

22. (Canceled)

23. (Currently amended) The kit of claim 19 ~~or 20~~, wherein said genetically modified bacterium is selected from the group consisting of *P. putida* 2440, *P. fluorescens* 5R, *P. putida* F1, *Escherichia coli*, *Vibrio fischerii*, *Vibrio harveyi*, ~~or~~ and *Bacillus subtilis*.

24. (Currently amended) The kit of claim 19, wherein the bacterium is ~~*P. fluorescens 5R*~~ *E. coli* ARL1, ARL2 or ARL3.

25. (Currently amended) A ~~mobile~~ method for direct visual detection of ~~detecting~~ mercury in water samples comprising:

providing ~~a plurality of~~ at least one stably transformed bioreporter bacterium genetically modified to contain a construct integrated into the bacterial cell genome, wherein said at least one construct comprises a promoterless *lux* gene cassette and a *mer* regulatory element ~~a *merRo/p lux* gene~~, said stably transformed bioreporter bacterium being attached to a support

matrix comprising a filter strip and disposed within protective packaging for preserving hydration of said bacterium;

removing said protective packaging;

contacting a water-comprising sample suspected of containing mercury ~~II ion~~ with said bioreporter bacterium; and

detecting the presence of the mercury ~~ion~~ when a visibly detectable luminescence is produced~~, said detecting using a portable detection device~~.

26. (Original) The method of claim 25, wherein the bioreporter bacterium is *E. coli* ARL1, ARL2 or ARL3.

27. (Currently amended) The method of claim 25, wherein said visibly detectable luminescence ~~portable detection device comprises~~ is detected with a naked eye, night vision equipment or within a light-tight slide holder.

28. (New) The device of claim 8, wherein the bacterium is *E. coli* ARL1, ARL2 or ARL3.